DOCUMENT RESUME

ED 116 359 EA 007 848

AUTHOR	Hubbard, Ben C.; Hickrod, G. Alan
TITLE	A Look at Comparing State Aid to Local School Districts on an Interstate Basis.
INSTITUTION	Illinois State Univ., Normal. Center for the Study of Educational Finance.
REPORT NO	S-1-HH-75
PUB DATE	28 Oct 75
NOTE	20p.; Speech presented at the Annual Meeting of the Association of School Business Officials of the United States and Canada (Las Vegas, Nevada, October 27-31, 1975); Not available in hard copy due to light type of original document
AVAILABLE FROM	Center for the Study of Educational Finance, Department of Educational Administration, Illinois State University, Normal, Illinois 61761 ($0.35)
EDRS PRICE	MF-$0.76 Plus Postage. HC Not Available from EDRS.
DESCRIPTORS	Comparative Analysis; Constitutional Law; Costs; Court Litigation; Education; *Educational Finance; Elementary Secondary Education; *Equal Education; *Equalization Aid; Federal Aid; Federal Programs; Interstate Programs; Measurement Techniques; State Federal Support; State Programs; *Statistical Analysis; Supreme Court Litigation
IDENTIFIERS	*Fiscal Neutrality

ABSTRACT

The United States Supreme Court decision in the Rodriguez case does not make unequal educational opportunity between students any less of a moral injustice. It is immaterial whether these students are in different school districts in the same state, or in different school districts in different states. There is a role for the federal government in reducing the permissible variance of educational expenditures between states. This interstate comparison of permissible variance cannot be easily accomplished without agreement on criteria and increased sophistication of statistical techniques. Several methodologies and criteria that might aid in the measurement of intrastate permissible variance are suggested. (Author)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

ED116359

A LOOK AT COMPARING STATE AID TO LOCAL SCHOOL DISTRICTS ON AN INTERSTATE BASIS

Prepared by
Ben C. Hubbard
University Professor
and
G. Alan Hickrod
Professor

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

A Speech Prepared for Delivery by Ben C. Hubbard at the Annual Meeting of the Association of School Business Officials of the United States and Canada, October 28, 1975, 1:30 P.M.

Speech 1-HH-75
Center for the Study of Educational Finance
Department of Educational Administration
Illinois State University
Normal, Illinois 61731

BEST COPY AVAILABLE

EA 007 848

Matters of fact or opinion contained herein are solely the responsibility of the speaker (author) and in no way reflect the official policy of Illinois State University. As a part of its public service, the University seeks to promote a systematic and thorough discussion of all public policy matters and supports various types of research which contribute to that end.

Since the Tenth Amendment was put into effect along with the other nine amendments to the Bill of Rights in 1791, we have assumed that the basic rights related to education were the responsibility of the states. To refresh your memory, the Tenth Amendment said, "The powers not delegated to the United States by the Constitution, nor prohibited by it to the states, are reserved to the states respectively, or to the people."[1]

It was Cubberly, the historian, writing in 1919 who explained the generally held conviction when he said:

> By the Tenth Amendment to the Constitution, ratified in 1791, the control of schools and education passed, as one of the unmentioned powers thus reserved to the people of the different states to handle in any manner which they saw fit.[2]

It is possible to read into the Preamble of the Constitution authority for the federal government to have much to do with the education of pupils depending upon how one interprets the section which says, ". . . promote the general welfare." The courts have been reluctant to open this issue, or for that matter to use the general welfare clause for the basis of getting the federal government into many areas. We could even conceivably get a Supreme Court with different members to declare education a fundamental constitutional right, and there is a movement among some to amend the Constitution so that education would be an explicit right.

In 1973 the Supreme Court, in the San Antonio Independent School District et. al., Appellants v. Demetrio P. Rodriguez et. al.[3], refused to declare equal

1

education a fundamental right. Despite the split vote of the court, the law is that equal education is not a U. S. constitutional right even between students in the same state. This then must mean that, with the Tenth Amendment still with us as it is interpreted, we cannot expect any immediate relief in the matter of equalizing between states.

As an aside, a properly brought case establishing the need for the federal government to equalize between states might just have as good or better chance to win than another Rodriguez. There is also much merit in an argument advanced by Professor Kern Alexander of the University of Florida.[4] Alexander argues that even if the federal government may not have an explicit responsibility to equalize educational expenditures between states, the national government does have a responsibility to do nothing that would make those expenditure levels more unequal. He then proceeds to show that in 1970 and 1971 two federal programs, e.g., Title One of the Elementary and Secondary Education Act and P.L. 874 (federal impaction), did, in fact, make greater allocations to rich states than to poor states. To take a specific illustration, $134 was sent to the state of Alabama for each eligible Title One pupil, while $273 was sent to the state of New York for each eligible Title One pupil. If there is any evidence that an educationally deprived child in New York is that much more deprived than an educationally deprived child in Alabama, I am not aware of it. Further, while the cost of education is undeniably greater in New York than in Alabama, surely it is not two-thirds greater. We hope this situation has been corrected, but the point is that the federal government needs to monitor

its programs constantly to make sure that no matter what the goals of any of its many programs, none of these programs contribute to moving us away from equality of educational opportunity. The means of legal redress is not clear here. It may lie through the due process clause of the Fifth Amendment as Alexander suggests, or it may be found elsewhere in the Constitution. More likely, it will be the legislative branch, as it is in the states, that will have to assume the final responsibility. Educational deprivation is just as much a crime for the black lad in those red clay fields of my native state, Alabama, as it is for the black child in the worst ghettos of New York City. To deprive a child of any color of his or her opportunities in life is morally and ethically wrong, and some day, the good Lord willing, the Congress of the United States may make it legally wrong as well.

There is much evidence that equalization of the ability of states to match each other on the average might do more real good for education than just equalizing within states. I suspect that this will be considered the 'idle babbling' of a professor rather than a serious proposal. But, let me hasten to add that I know the serious problem of organization to deliver services in the many and varied local school districts of this country and that I have had an office in the state capitol in my state working regularly with legislators since 1964. What I have said all of this to say is, equal educational opportunity for American citizens is a goal that educators must put more into achieving than lip service. It is not enough to achieve universal education, if we ever make it; we must at least approach the time when we assure every person an opportunity to secure

a quality, if not a totally equal, education. It is not enough to keep school in session nine or more months for regular classroom students. We must offer special education, gifted programs, vocational education and all the rest to all students at a level that will at least awaken their real potential. We must become concerned about the real educational opportunity for all. You who make business decisions about the best of our schools must become concerned about the quality of education offered in the worst of our schools. You who come from our most fortunate states must be concerned about what is happening in our least fortunate states.

The topic of this paper indicates that we must look at interstate comparisons. One simple reason that interstate comparisons are needed is so that equalization on some rational basis can be considered. There are a host of problems that must be dealt with before meaningful comparisons can be made. In this speaker's judgment, you could totally disagree with the concept that I have hinted at, federal equalization, and still support the idea of developing interstate comparisons.

If you accept the Tenth Amendment as forbidding the federal government's becoming involved in equalization, there are reasons you need to make interstate comparisons. For one thing you must want to know as a taxpayer in a particular state, "How does what we get for our money compare to what others are getting? Are there things for which you should be getting a greater return?" In the best sense of the word, interstate comparisons could help with whatever side of the accountability question you take. Because we at Illinois State University have felt that just comparing what Illinois' best schools do with our

poorest schools is not enough, we have been working to develop some techniques for comparing what we as a state do with what other states do in the way of financial support and equalization. As we have looked at this problem, we have found problems more involved than comparisons between schools in a state even when states have, as we do, separate elementary and high schools in some areas and then organize them together in K-12 districts in others.

Some of the problems and some ways to deal with them is the purpose of the rest of this paper. For a number of years, school "business management" has broken cost down into similar cost areas. Cost comparisons with other districts are currently, and we hope in the future, available from Market Data Retrieval, 800 Boston Port Road, Westport, Connecticut 06380. Handbook II and all of its predecessors and successors have helped to standardize within limits the way records are kept.

However one goes about comparison between states, the Tenth Amendment and its interpretation continue to make comparisons difficult. We still have fifty separate systems with many different approaches to delivering services and describing both income and expenditures. If the business variations were not enough, college professors and chief school officers still play the game of giving their activities new names even when the activity is out of the past or like others. All these things make it difficult to compare funding, business practices and especially the output of the fifty state systems.

If we are ever to establish any rational basis on which to argue for federal assistance to overcome inequities between states, we must make a broader

interpretation of the Tenth Amendment. I would simply suggest that the near miss in Rodriguez could have been parlayed into having the federal government assume the equalizer role. When one reads all of the fiscal neutrality cases, you find in footnotes references to federal funds and their role in dealing with inequities, but no substantive decision has been made on this point. If the constitutional right to equal education within a state had been won, then we could have expected the influence of the Tenth Amendment, which currently prevents the direct involvement of the federal government in equity between states, to have been greatly reduced. Where the problem is one of at least guaranteeing a quality level or reducing the variance below the median expenditure, there must be a role for the federal government. This role may well shape into some reduction of variance in expenditures at least for those states below the median cost for the nation or of making sure that tax efforts equitably measured will produce similar amounts of funds.

If such measures or possibilities are in the future, the case for systems of comparing the efforts of states is clear. We need not spend more time on this point. If there is no possibility for the equalizer being applied between states, then there is still a valid reason for comparison--it is simply not so clear or forcible.

Simply as a matter of pride or commitment to equalizing the educational opportunity between states, we need to know how systems work and which system performs the best by some standardized measures. It would be foolhardy for educators to say that what Michigan, Wisconsin, Iowa, Missouri and Indiana

do will not affect Illinois schools and what the General Assembly in Illinois appropriates for education. Because claims for systems are usually greater than their actual performance, especially after legislators make political changes, there needs to be serious comparisons of the results based on genuine equity criteria. There is a sense in which all states may have differing goals and as such comparisons on a simple equity measure may not show a state system in as favorable light as its architects wish. On the other hand, schools are so complex that the use of any single measure of equity would be naive, to say the least, and probably foolish. Comparisons must be on multiple criteria and the field which is only in its infancy must find better tools for making comparisons.

To make comparisons on a meaningful basis, many problems of comparable records, data and analytical systems must be solved. What I propose to do for the time remaining is to outline some of the problems and some possible solutions. Without a national system, the researcher must continue to find ways to use data in a comparable way, whether or not the systems and records are alike.

Some of the problems that we faced need to be looked at. In brief, but outline, form let me suggest some of the most obvious problems.

1. What monies (funds) will be used to make comparisons?
    a. Will all funds for all purposes be the basis of comparison?
    b. Will only state and local funds be compared or will federal funds be considered?
    c. How will categorical assistance be handled?

d. Will operational and capital cost be handled separately?

2. In order to determine equity, how will the wealth of the state or of school districts be defined?

a. If property assessment is used as a wealth measure, how will comparative values be established? Don't dare say that "this is easy--just use fair market value," because there is no reliable data for this in many states.

b. Does the measure of wealth include income and, if so, how is it measured so that comparisons can be equitably made?

c. If one state uses income in their allocation system, should it be used as a measure of wealth in that state and ignored in the state with which it is being compared because the second state does not use it in the allocation system?

d. Should we report that a state has improved equity just because, when measured against assessment, it has improved, when we know that in the state there is little or no correlation between assessed value and income?

3. How is educational need to be measured?

a. Shall enrollment with no weighting be the basis of comparison?

b. Can average daily attendance be used?

c. Is it better to used a weighted enrollment or ADA for comparison?

d. Can budgeted need be a basis of comparison?

e. Can comparisons that are meaningful be made by simply using the system of establishing need that the state being studied uses?

4. If you are serious, as some researchers are, about egalitarian goals such as those proposed in Serrano and Rodriguez, how will you measure equity?

   a. Will you use a simple correlation between the averages of all districts in each state or will you establish comparisons between similar districts?

   b. Will you simply use a measure of variance reduction

      (1) between the low and the high expenditure districts,

      (2) variation within the middle half (quartile 2 and 3) of school districts as ranked by expenditure,

      (3) variation below a stated quality expenditure, or

      (4) variance of school monies available for districts below the median?

   c. Will you use a measurement of fiscal neutrality, and if so, what will that measurement be?

      (1) Is your concept of fiscal neutrality that there be no positive relationship between local wealth and expenditures, <u>irrespective of differential effort between districts</u>--what Stephen Barro has termed the "ex post" notion of fiscal neutrality?[5]

      (2) Is your concept of fiscal neutrality that there be no positive relationship between local wealth and expenditures <u>at each effort level, that is, with differential effort explicitly taken into consideration</u>--what Barro terms the "ex ante" version of fiscal neutrality?[6]

(3) Is the Gini Index and Lorenz Curve the most appropriate way to measure fiscal neutrality as argued by Hickrod, Gensemer, and Garms?[7]

(4) Is the linear regression the most appropriate way to measure fiscal neutrality as argued by Michelson and Feldstein?[8]

Some measures that we have used in measuring some form of equity and found helpful include the following.

1. Where we have followed post practices, we have of course run Pierson Coefficients of correlation between wealth (measured in different ways) and state funds paid with the highest negative correlation being the most desirable from an equity standpoint. There are some real problems with this in many states. The nature of district organization is important. In Illinois we have one district with over 500,000 pupils and another with less than 50. This technique does not consider this fact and its implications. If you want to illustrate this fact, calculate average cost for each district and then select the median district to discuss central tendency and then calculate the actual average cost using all students and you will see why correlation of averages can be misleading. To use the best negative correlation between money and wealth by using any average cost of average wealth actually has all of the problems of averaging averages and as a result is a foolish exercise if we hope to compare states in a meaningful way. Correlation comparison seems to be a fruitless exercise even if we only use a description of the results in each state instead of comparing the statistical output.

In our investigations at Illinois State University we have come to believe that the concept of "fiscal neutrality" may be more useful in interstate comparisons than the older concept of "equalization." Too often in the older literature "equalization" meant simply the relationship of local wealth to state aid, often measured by the Pierson correlation coefficient between state aid and local wealth. Occasionally the bi-variate relationship between state aid and wealth was specified by a linear regression coefficient or by the Gini Index. These latter two measurement techniques have some advantages over the correlation coefficient but the real problem lies in the fact that locally raised funds are totally ignored. To illustrate this point, assume two states--X and Y. X provides 80% state support and Y provides only 20% state support. However, the political forces in Y are such that Y distributes most of its meager state dollars to the poorest districts in the state. On the other hand, the rich have forged a better deal for themselves in state X and some of the much more adequate dollars in that state do go to the wealthier districts. By any of the older bi-variate measurements between wealth and state aid, state Y will seem to have the stronger "equalization." However, the dependence upon local resources in Y will almost surely cause that state to have a greater disparity of expenditures between the rich and the poor. The more revealing bi-variate relationship is that between local wealth and total expenditures, or between local wealth and expenditures broken down into locally raised, state provision and federal provision. This relationship between expenditures and local wealth is exactly what most operational definitions of the concept of fiscal neutrality now use.[9]

2. When calculating the concentration around the mean, we have found it desirable to use the "Coefficient of Variation." We have simply taken the standard deviation of the distribution, divided it by the mean and multiplied it by 100.($V = \frac{SD}{\bar{X}} \times 100$) ($SD = \sqrt{\frac{\Sigma x^2}{N}}$)This to some extent standardizes the result of the measurement and helps when comparing different states. The real problem is simply that a state that reduced its high expenditure could come off as well as one that raised the lowest, so one can see that just the variance of coefficient without considering how it was changed is not enough. This tool can of course be used but must be used with caution. It is, however, a good measure of the variations that exist.

3. When we have attempted to measure fiscal neutrality, we have used a Lorenz Curve (at least, we have borrowed the Lorenz Curve idea which Lorenz used to describe income distribution) and the related Gini Index. The Lorenz Curve provides a graphic representation of the relative shares of state and local monies received by poor children versus rich children. The Lorenz Curve is a graphic device to plot the cumulative percent of school revenue against the cumulative percent of pupils ranked by wealth and to compare this plot with the ideal plot of each student receiving the same dollars regardless of wealth.

When we have plotted or calculated the Lorenz Curve, we have transferred this to a Gini Index by calculating the relationship between the areas of the curve. This shows us mathematically how near a state approaches the ideal and can, with caution, help us to compare the effect of changes in different states (See Appendix A). An example of one pitfall would be enough to illustrate

why relationship is not enough to assure good comparison. A state might expend a maximum of $800 per pupil while no one received less than $600 with a state average of $725, while another stated varied between $600 and $1800 with a state average of $1200. More than the variance would need to be considered or the low expenditure state system could not be held up as an example of a desirable system. The same is true of the Lorenz Curve and Gini Indexes. The low spending state just might be making a more even distribution of monies between the rich and the poor. The level of funding is as important as the variance of funding and also as important as the shares received by rich versus the poor.

4. Regression analysis can also be used to measure fiscal neutrality. One can describe fiscal neutrality in terms of the elasticity of educational spending with respect to the value of local wealth per pupil. Absolute fiscal neutrality would require the wealth elasticity to be zero, but since this is not true in any state, there would always be a variation from "0." A regression analysis can measure this variance from 0 and be used to compare states.

What we have found is that all of these techniques must be used, if tempered with understanding, to compare a previous year or time with the present in a given state. Additional caution must, however, be used when states are compared. In the final analysis the science of comparing different states which admittedly have different goals is complicated. This may be the key to the whole process. Rather than comparing state X with state Y, the better position may be to see how well X has attained its goals versus how well Y has

attained its goals, and the goals then need not be identical. Movement toward worthwhile goals may be more significant for future education than high correlations that do not change. Average expenditure for the poorest half of students in a state could be a better indices of progress toward equal opportunities than a variation of expenditures of less than $200.

Since my second grade teacher asked me what the sum of 3 apples and 2 oranges was and I said 5, I have remembered that 5 is not enough. She was right when she said the correct answer was 3 apples and 2 oranges, but then and now the question could have been changed. Had she said how many pieces of fruit would a person with 3 apples and 2 oranges have, my answer of 5 would have been correct.

What I have tried to imply today is that we may not be asking all of the right questions and thus, as accurate as our statistical answers are, they may be the right answers for the wrong questions. We have a long way to go before we really can answer a judge's question--How does education or even educational finance compare between Illinois and Iowa? --without worrying about the other 48 states.

References:

1. The Constitution of the United States, Amendment X.

2. Cubberly, Ellwood P., Public Education in the United States. Boston: Houghton Mifflin Company, 1919 revised 1934.

3. San Antonio Independent School District et. al, Appellants v. Demetrio P. Rodriguez et. al., 337F.S. 280, Texas.

4. Alexander, Kern, "Constitutionality of Federal School Aid Formulas," in Kern Alexander and Forbis Jordan (eds.), Constitutional Reform of School Finance. Gainesville: Institute for Educational Finance, 1972.

5. Barro, Stephen M., "Alternative Post-Serrano Systems and Their Expenditure Implications," in John Pincus (ed.), School Finance in Transition. Cambridge: Ballinger Publishing Company, 1974.

6. Barro, ibid.

7. Hickrod, G. Alan, Ben C. Hubbard and Thomas Wei-Chi Yang, "The 1973 Reform of the Illinois General Purpose Educational Grant-in-Aid," Selected Papers in School Finance, 1974. Washington, D. C.: USOE. For an early application of the Gini Index see Hickrod, et. al., "Definition, Measurement, and Application of the Concept of Equalization in School Finance," Document #078 551 in the ERIC system; Gensemer, Bruce L., "Equalizing Educational Opportunities: Analysis of Proposed Reforms in Ohio State Aid to Public Schools," 1975 Annual Meeting of the Ohio Association of Economists and Political Scientists," Kenyon College, Ohio; Garms, Walter I., "Use of the Gini Index in School Finance Research," paper delivered to the 1975 meeting of the American Educational Research Association.

8. Michelson, Stephan, "What is a "Just" System for Financing Schools? An Evaluation of Alternative Reforms," in Betsy Levin (ed.), Future Directions of School Finance Reform. Lexington: Lexington Books, 1974; Feldstein, Martin S., "Wealth Neutrality and Local Choice in Public Education," The American Economic Review, March, 1975.

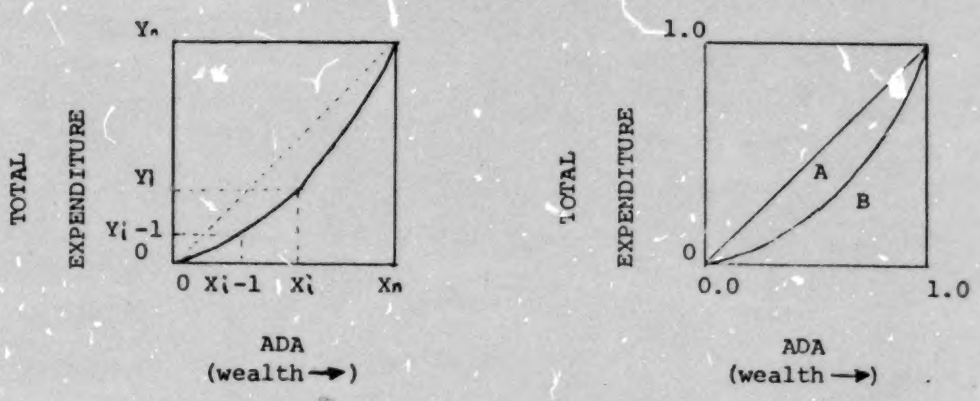
9. For a development of these ideas and for measurement techniques see the following literature: Hickrod, G. Alan, Thomas Wei-Chi Yang, Ben C. Hubbard and Ramesh Chaudhari, "Measurable Objectives for School Finance Reform: A Further Evaluation of the Illinois School Finance Reforms of

1973," paper presented to the 1975 meeting of the American Educational Research Association, available as Document ED 103 977 in the ERIC system; Hickrod, G. Alan, Ben C. Hubbard and Thomas Wei-Chi Yang, "The 1973 Reform of the Illinois General Purpose Educational Grant-in-Aid," Selected Papers in School Finance, 1974. Washington, D. C.: Department of Health, Education, and Welfare; Hickrod, G. Alan, Ramesh Chaudhari and T. H. Tcheng, "Definition, Measurement, and Application of the Concept of Equalization in School Finance." Springfield: Illinois Office of Education, 1972, available as Document ED 078 551 in the ERIC system; see also Superintendent's Advisory Committee on School Finance: Final Report. Springfield: Illinois Office of Education, 1973, available as Document ED 078 550 in the ERIC system.

APPENDIX 2

COMPUTATION OF GINI COEFFICIENT

The districts are sorted in ascending order of wealth per pupil. The cumulative proportions of pupils in the districts are represented by the horizontal axis and the cumulative proportions of total operating expenditures accounted for by these districts are represented by the



vertical axis. The curve thus plotted would be a straight line if the operating expenditures per pupil were the same in all districts. A sagging curve represents lesser expenditure in poorer districts. The measure of this inequality as defined by Gini Coefficient G is given by the formula:

$$G = \frac{\text{Area A}}{\text{Area (A+B)}}$$

or after further simplication

$$G = \frac{0{\cdot}5 - \text{Area B}}{0{\cdot}5}$$

$$= 1 - 2\text{Area B} \qquad (1)$$

Area B is the area under the curve and if n is the number of districts, and

X_i = cumulative proportion of ADA for the ith district

y_i = cumulative proportion of $ for the ith district

$$\text{Then Area B} = \sum_{i=1}^{n} \frac{(x_i - x_{i-1})\ (y_{i-1} + y_i)}{2}$$

$$\text{or 2 Area B} = \sum_{i=1}^{n} (x_i y_{i-1} - x_{i-1} y_{i-1} + x_i y_i - x_{i-1} y_i)$$

$$= (x_i y_0 - x_0 y_0 + x_1 y_1 - x_0 y_1$$

$$+ x_2 y_1 - x_1 y_1 + x_2 y_2 - x_1 y_2$$

$$+ x_n y_{n-1} - x_{n-1} y_{n-1} + x_n y_n - x_{n-1} y_n)$$

$$= (x_2 y_1 - x_1 y_2) + (x_3 y_2 - x_2 y_3) + \ldots$$

$$+ (x_n y_{n-1} - x_{n-1} y_n) + x_n y_n$$

$$= \sum_{i=2}^{n} (x_i y_{i-1} - x_{i-1} y_i) + 1 \qquad (2)$$

$$= 1 - \sum_{i=2}^{n} (x_{i-1} y_i - x_i y_{i-1})$$

substituting the value of area B in eq 1

$$G = \sum_{i=2}^{n} (x_{i-1} y_i - x_i y_{i-1}) \qquad (3)$$

*Prepared by Ramesh Chaudhari, Computer Services, Julian Hall, Illinois State University, Normal, Illinois 61761.